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SPECIFICATION COVER SHEET

Client: Gowanus Canal Remedial Design Group

Project: Gowanus Canal – 4th St Turning Basin Pilot Study – Dredging and Capping

Project #: HPH106A

SPECIFICATION SECTION: 02 60 16 **TITLE:** SEDIMENT AND FLOATABLES CONTAINMENT

SPECIFICATION PREPARED BY:
(Specification Preparer, SP)
Signature _____ Date 5/19/17
Name Jeremy Gasser

SCOPE AND FORMAT CHECKED BY:
(Scope and Format Checker, SFC)
Signature _____ Date 5/19/17
Name Jessica Fears

DETAILED REQUIREMENTS CHECKED BY:
(Detailed Requirements Checker, DRC)
Signature _____ Date 5/19/17
Name Darrell Nicholas

APPROVED BY:
(Specification Approver, SA)
Signature _____ Date 19 May 2017
Name J.F. Beech

Record of Revision (Number and initial all revisions)

Rev. No.	Reason	Date	By	Checked	Approval
0	TB4 Pilot Study Design – Issued for Bid	05/19/17	JMG	JMF	JFB

SECTION 02 60 16

SEDIMENT AND FLOATABLES CONTAINMENT

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SECTION 02 60 16

SEDIMENT AND FLOATABLES CONTAINMENT

PART 1 GENERAL

1.01 SUMMARY

A. Work activities in the 4th Street Turning Basin will suspend sediment in the water column, thus increasing the turbidity and total suspended solids (TSS) concentrations. Dredging and other activities also have the potential for creating a sheen on the water surface. To mitigate increased TSS and sheen throughout the Canal, the Contractor is required to install and maintain sediment resuspension control (air and/or turbidity curtains) near their operations that have the potential to cause TSS or sheen in the work area. This specification details the sediment and floatables containment to be used in the Canal.

1.02 RELATED SECTIONS, PLANS, AND DOCUMENTS

A. Section 01 33 00 Submittals

B. Section 01 35 29 Health and Safety Requirements

C. Section 01 41 00 Regulatory Requirements

D. Section 01 57 19 Temporary Environmental Controls

E. Section 31 41 16 Sheet Pile Installation

F. Section 35 20 23.13 Dredging and Dewatering

G. Section 35 43 00 Capping

H. Construction Drawings

I. Contract Documents

1.03 REFERENCES

A. Geosyntec, May 2016. "Water Quality Monitoring Plan for In-Waterway Construction Activities in RTA 1 and The Fourth Street Turning Basin (Draft)."

B. ASTM International (ASTM) Standards:

1. ASTM D 4632-08 Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; and

2. ASTM D 4751-04 Standard Test Method for Determining Apparent Opening Size of a Geotextile.

1.04 SUBMITTALS

A. The Contractor shall submit the following to the Owner's Representative in accordance with Section 01 33 00:

1. Plans and specifications detailing the support pilings for the sediment and floatable containment, which will include the following:

   a. Exact location of the pilings (a map depicting the northing and easting, see Construction Drawings);

   b. Piling details (e.g. material type, diameter, overall length, length embedded within the sediment, etc.); and

   c. Method of installation.

2. Plans and specifications for the air curtain, which will include the following:

   a. Equipment (e.g. blower/compressor, header piping, diffuser nozzles, power source, etc.) and layout;

   b. Anchoring and support design;

   c. Design and operation calculations (e.g. air flowrate, pipe sizing, nozzle spacing, electrical power requirements, etc.);

   d. Buoys and automatic flashing lights or other navigational warnings; and

   e. Access agreements for any land-based equipment.

3. Plans and specifications for the turbidity curtain, which will include the following:

   a. Manufacturer’s product data for turbidity curtains and related appurtenances;

   b. Number of curtain panels, length, connections and reefing;

   c. Turbidity curtain mooring design;

   d. Manufacturer’s product data for lights;

   e. Oil booms;

   f. Procedure for deploying the turbidity curtain at the correct location and depth; and

g. Procedure for tying up the turbidity curtain during working hours, when the air curtain is in use.

1.05 HEALTH AND SAFETY REQUIREMENTS

A. The Contractor shall comply with environmental health and safety/training requirements in accordance with the approved Health and Safety Plan and Section 01 35 29.

PART 2 PRODUCTS

2.01 ANCHORING AND WARNING EQUIPMENT

A. Equipment required for the set-up and anchoring of sediment and floatables containment devices includes, but is not limited to:

1. Two pilings will be installed to anchor the air curtain and the turbidity curtain (one on each side of the Canal at the entrance to the 4th Street Turning Basin), as depicted in the Construction Drawings;

2. Buoys to mark the construction zone in the 4th Street Turning Basin; and

3. Automatic flashing lights,

2.02 AIR CURTAIN EQUIPMENT

A. The Contractor shall provide all equipment for the air curtain is as follows:

1. Air source such as blowers or compressors;

2. Power source for the equipment;

3. Header and diffuser piping:

a. Minimum 2-inch diameter with maximum diffuser spacing of 18 inches; and

b. Capable of providing a minimum of 3 cubic feet per minute (cfm) per lineal foot throughout the diffuser piping.

4. Non-clog coarse bubble diffusers (such as Tideflex Technologies, a division of Red Valve Company) or similar alternate;

5. Anchors and supports; and

6. Any other applicable equipment.

B. Operation of the air curtain shall meet the following requirements:

1. Noise control in accordance with Section 01 57 19;

2. Provide sufficient pressure to overcome hydrostatic head and pipe losses throughout the full range of water depth and tidal conditions encountered at the site; and

3. Provide a minimum airflow of 600 cfm.

2.03 TURBIDITY CURTAIN EQUIPMENT

A. The Contractor shall provide all equipment for the turbidity curtain as follows:

1. Curtains and connections:

a. Fabric shall have a minimum grab strength of 300 pounds per square inch (psi) when tested in accordance with ASTM D 4632-08.

b. Curtains shall be a bright color (yellow or "international" orange are recommended) that will be visible to nearby boaters.

c. The top geosynthetic section shall consist of an 18-22 ounce PVC coated nylon fabric.

d. The bottom geosynthetic section shall consist of a geosynthetic having a filtration Apparent Opening Size (AOS) of 0.220 mm maximum for non-woven geotextiles, and AOS of 0.425 mm maximum for woven textiles, when tested in accordance with ASTM D 4751-04.

e. Turbidity curtain floatation material shall be a closed cell solid foam material which has sufficient buoyancy to provide the curtain with continuous support, and a minimum freeboard of six inches. The sections of floatation shall be installed such that they cannot move along inside the sleeve and the space between sections shall not be more than twice the thickness of the floatation material.

2. Curtain anchoring:

a. Load lines shall be minimum 5/16-inch vinyl coated galvanized aircraft cable with 9,800-pound breaking strength. The load line shall have galvanized connectors with tool free disconnect.

b. Reefing lines shall be minimum 1/2-inch nylon rope.

c. Ballast shall be minimum 5/16-inch galvanized steel chain.

d. Additional anchorage shall be provided as necessary.

3. Any other applicable equipment.

PART 3 EXECUTION

3.01 PILING INSTALLATION

A. Prior to commencement of dredging activities, the Contractor shall install pilings as shown in the Construction Drawings. The pilings will serve as anchor points for both the air and turbidity curtains. The air and turbidity curtains shall not be affixed to any bulkhead.

B. The pilings shall be of sufficient strength and installed to a sufficient depth to support both the air and turbidity curtains without attachment to the bulkhead.

C. The pilings shall be installed so there is a minimal gap between the piling and bulkhead. The Contractor shall include a contingency in their design such that if an excessive gap is present following installation of the pilings, a turbidity curtain or other barrier approved by the Owner's Representative shall be installed between the piling and bulkhead to eliminate the gap.

3.02 SEDIMENT AND FLOATABLES CONTAINMENT APPROACH

A. Sediment and floatables containment shall be used for the duration of dredging operations (Section 35 20 23.13). The primary method of sediment resuspension control during dredging operations will be through the use of an air curtain. The air curtain is to be operational during the day and at all times when activities are occurring that could resuspend sediment.

B. Sediment and floatables containment shall be used for the duration of sheet pile installation (Section 31 41 16). The Contractor may use either the air curtain or the turbidity curtain to control sediment resuspension during Sheet Pile Installation.

C. At the completion of dredging and sheet pile installation, use of the air curtain may be discontinued. The turbidity curtain shall remain ready for deployment during during capping operations (Section 35 43 00). If necessary, the turbidity curtain shall be used during capping to prevent re-contamination of the capped surface during storm.

D. During dredging and sheet pile installation, a turbidity curtain shall be readily available to deploy when the air curtain is not in use (e.g., on nights and weekends). The turbidity curtain will also serve as a backup sediment and floatables containment method should the air curtain become nonoperational. If the air curtain becomes nonoperational, the Contractor shall notify the Owner's Representative. The Owner's Representative will determine if the Contractor shall stop operations to repair the air curtain or to deploy the turbidity curtain while the air curtain is under repair.

E. The Contractor shall avoid positioning barges, tugs, or other obstructions over the air curtain for extended periods of time and minimize transit times consistent with prudent operation.

F. At any time, the Owner's Representative reserves the right to change this approach (e.g. terminate the use of the air curtain or the turbidity curtain) due to observations or water quality results.

3.03 AIR CURTAIN PLACEMENT AND OPERATION

A. An air curtain is to be installed as follows prior to commencing Work and is to remain in place until completion of dredging activities:

1. The Contractor shall provide barge-mounted air and power sources. Alternate land-based power sources are acceptable with submittal of access agreements with the property owner and approval from the Owner's Representative.

2. The air curtain shall operate during working hours (as described in the Contract Documents) and in all weather conditions.

3. If the exceedance of the threshold turbidity criteria (as defined in Section 01 57 19) is observed during work in the Canal, the Contractor shall implement water quality controls in accordance with this Section and Section 01 57 19, including but not limited to, slowing or halting operations, modifying operational procedures, and modifying turbidity control measures.

3.04 TURBIDITY CURTAIN PLACEMENT

A. A turbidity curtain is to be installed as follows prior to commencing Work and is to remain in place until the Work is completed:

1. The turbidity curtain shall be moored to the newly installed pilings described above.

2. A gap of approximately one (1) foot should exist between the weighted lower end of the skirt and the bottom of the Canal at mean low water (MLW).

3. Seams in the fabric shall be either vulcanized or sewn, and shall develop the full strength of the fabric.

4. Bottom anchors shall be sufficient to hold the curtain in the same position relative to the bottom of the watercourse without interfering with the action of the curtain. Anchors may dig into the bottom (grappling hook, plow or fluke-type) or may be weighted (mushroom type) and shall be attached to a floating anchor buoy via an anchor line.

B. The turbidity curtain shall be deployed at all times when the air curtain is not operational (i.e. nights, weekends, and during equipment malfunctions with the air curtain).

C. Absorbent oil booms shall be placed on the sediment-disturbing side of the turbidity curtain any time the turbidity curtain is deployed to control non-aqueous phase liquids (NAPL) and sheen in the 4th Street Turning Basin.

D. If an exceedance of the threshold turbidity criteria is observed during Work in the Canal, the Contractor shall implement water quality controls in accordance with this Section and Section 01 57 19, including but not limited to, slowing or halting operations, modifying operational procedures, and modifying turbidity control measures.

E. During times that the air curtain is deployed (i.e. during daytime operations), the turbidity curtain shall be stored as detailed in the Contractor's approved plans and specifications for the turbidity curtain.

3.05 INSPECTIONS

A. Contractor shall be responsible for maintenance of sediment and floatables containment for the duration of the project.

B. The Contractor is required to perform daily inspections of all parts of the sediment and floatables containment.

C. If upon inspection it is determined that any part of the sediment and floatables containment is damaged or no longer functional, it must be repaired or replaced prior to continuing construction activities.

D. If turbidity curtains are deployed, the Contractor shall collect, remove and dispose of floating debris and visual surface oil sheen resulting from project activities. The Contractor shall drum spent absorbent materials and transport them for disposal or to the Staging Site for temporary off-loading and on-site storage.

E. When the sediment and floatable containment is no longer required as determined by the Owner's Representative following completion of construction, the pilings, curtains, and related components shall be removed in such a manner as to minimize turbidity. The Contractor is responsible for the removal and disposal of the turbidity curtains and related components.

3.06 NAVIGATIONAL IMPACTS

A. All work performed on the Canal that may restrict access by others shall be communicated with a Local Notice to Mariners as described in Section 01 41 00.

B. Buoys shall be installed to mark locations of pilings, air curtain, and turbidity curtain.

C. Automatic flashing lights shall be affixed on top of the pilings and to the turbidity curtain, which operate from dusk until dawn.

[END OF SECTION]